

# **NEW YORK REGIONAL ENERGY-WATER WORKSHOP**

## **New York Context: Regional Influences and Trends**

The Workshop participants agreed that energy-water nexus issues in southeastern New York, a relatively water-rich region, are different in emphasis than those identified in water-scarce western states, but in many cases similar in nature. New York does have drought-prone regions, particularly in the north where the rivers flowing south to New York City provide hydroelectric power, feed the reservoirs, provide cooling water for thermal power plants, and provide a conduit for treated wastewater. Management of the saltwater resource also must be factored into planning, as freshwater withdrawals can cause saltwater intrusion in times of low freshwater recharge, and as saltwater comprises 55% of cooling water withdrawal in New York (USGS, Estimated Use of Water in the United States in 2000, Circ. 1268, 2004). Further, water and energy security are very important to the New York metropolitan area in the post 9-11 world. Finally, electricity deregulation has a profound impact on long term planning.

Some regional influences on addressing energy-water issues in New York noted by the workshop participants are:

- New York was settled early and has an aging energy and water infrastructure.
- New York City is an older city with a dense urban population, reliant on surface water brought in a gravity-feed system.
- Long Island is densely populated, reliant on a groundwater aquifer, and vulnerable to saltwater intrusion and storms.
- The New York metropolitan area has a highly deregulated electricity sector.
- In New York State as a whole there is an acknowledged lack of integrated planning among those responsible for water quality and quantity and those responsible for energy supply and demand.

The participants identified several trends in New York that will frame the energy-water issues in the future:

- There will be continuing growth in population in the New York metropolitan region, causing increased consumption of water and electricity
- Electricity deregulation coupled with strict environmental regulation will make planning for increased electricity generation difficult.
- New York City has difficult post 9-11 energy and water security considerations.
- Climate change is likely to reduce the region's capacity to provide power and water at the same time that there will be increased demand for power and water. Saltwater intrusion is projected to increase, reducing the availability of fresh water from the Long Island aquifer and pushing the saltwater-fresh water interface further up the East River and the Hudson River. Extremes of weather are likely to be more frequent and more intense, including the likelihood of more severe droughts, heat waves and floods (Columbia Earth Institute, "Climate Change and a Global City – Metro East Coast", 2001).

## **New York Energy-Water Issues**

As the Workshop participants discussed New York regional energy-water concerns, several over-arching issues emerged.

- **The New York region relies on an aging water and building infrastructure**
  - The water system for New York City is over a century old.
    - There are major leaks in water conduits to New York City from upstate New York. Repair is difficult while maintaining adequate water to New York City residents.
  - The steam district heating system is aging, and in some buildings it is difficult to meter and charge properly.
  - Removal of wastewater and stormwater are combined, resulting in sewer overflows during storms.
  - The region contains many energy-inefficient buildings.
  - There is an outdated price structure for both water and energy.
- **The dense urban population setting in New York City, Long Island and in much of the Northeastern U.S. impacts regional energy-water issues**
  - Power plant siting is difficult. There is little land available in the region. The dense population intensifies NIMBY concerns and strict environmental regulations are in place. Social justice issues arise in New York City when siting power plants.
  - Wastewater treatment facility siting is difficult. In New York City heavy storm drainage taxes water treatment facilities. The water quality of rivers is affected by heavy nutrient loading.
  - Long Island has mostly decentralized water treatment and a sole-source aquifer for fresh water.
  - Energy and water security are major issues in the New York Metropolitan region.
    - Human health depends on energy and water from outside New York City.
    - The water supply from surface waters and aging aqueducts is vulnerable and hard to protect from sabotage.
    - The electricity grid is susceptible to blackouts from outside causes, also a security concern.
    - The region is heavily dependent on imported oil.
- **Electricity deregulation, strict environmental regulations, and vocal neighbors have hampered long-term electricity planning**

- There is a complex regulatory environment for electric utilities. Some electric utilities are in bankruptcy.
- Decoupled electricity generation, transmission and distribution make integrated long-term planning difficult. The present focus is on short-term to intermediate-term planning.
- There is little incentive to plan with other stakeholders.
- Construction of large infrastructure projects is difficult and risky.
  - New electricity generation requires a large investment.
  - There is little investment capital in the electric utility industry – most new projects are funded by private investors.
  - Electricity industry needs integrated long-term regional planning to forecast power generation needs.
  - In the present deregulated environment, liability is carried by the power companies.
  - The new Clean Air Act Regulation 316 mandates closed cooling or better technology. This is very expensive. Improved cooling technology carries an efficiency cost for power generation and increased consumptive use of water (NETL, “Estimating Freshwater Needs to Meet 2025 Electricity Generating Needs Forecasts”, 2004).
  - Renewable energy sources have availability and reliability issues, requiring backup power.
- Article X of the New York State Public Service Law attempts to address some siting difficulties.
  - There is an intensive permit process for siting new power generation facilities in New York that creates a lot of uncertainty, which in turn increases investment risk.
  - Article X is intended to expedite power-plant siting, and thus to help overcome NIMBY (‘not in my back yard’) issues. Article X sets forth an expedited review process (a decision will be made within 12 months of a complete application being submitted) for siting electric generation facilities with a capacity of 80 megawatts or greater. The unified process mandates citizen participation, but removes uncertainty in the steps required by the applicant and places a time limit on reaching a decision.
- **There is a lack of integrated planning for energy and water interactions**
  - The current planning assumption is that water will always be available for energy projects.
  - The current planning assumption is that energy will always be available for water projects.
  - Climate change will increase stresses to both the energy and water systems.

- Water and energy planners need to develop common language, with consistent data and policy tools available to address the complex interactions involved with energy and water over time.
- The New York City Energy Study concludes that New York City will need another 2600MW in the next 5 years (NYC Energy Policy Task Force, "New York City Energy Policy: An Electricity Resource Roadmap", January 2004). Some questions that must be addressed include:
  - How to pay for this new capacity?
  - How to cool new power plants to meet the environmental requirements?
  - How to anticipate impacts on water during the planning process?
- The present trend in New York City toward using electric pumps instead of gravity to move water is increasing, raising questions of interdependencies between energy and water planning as well as issues of energy and water security.